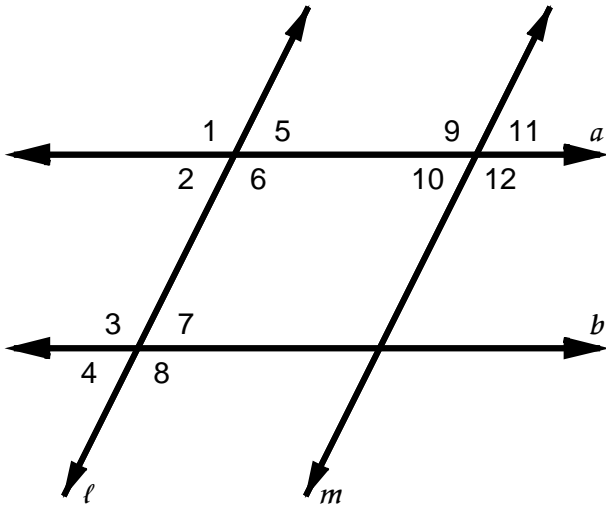


### Worksheet 4.3: Proofs in Two-column Form

Use the diagram below and the information given in each exercise to complete each proof.



1. Given:  $\ell \parallel m$ ,  $\angle 4 \cong \angle 10$

Prove:  $a \parallel b$

Plan for proof: Show that  $a \parallel b$  by showing that the corresponding angles  $\angle 2$  and  $\angle 4$  are congruent. Show that they are congruent by showing that they are both congruent to  $\angle 10$ .

#### Statements

#### Reasons

1.  $\ell \parallel m$

1.

2.  $\angle 10 \cong \angle 2$

2.

3.  $\angle 4 \cong \angle 10$

3.

4.  $\angle 2 \cong \angle 4$

4.

5.  $a \parallel b$

5.

2. Given:  $a \parallel b$ ,  $\angle 7 \cong \angle 10$

Prove:  $\ell \parallel m$

Plan for proof:

<u>Statements</u>	<u>Reasons</u>
1. $a \parallel b$	1.
2. $\angle 7 \cong \angle 2$	2.
3. $\angle 7 \cong \angle 10$	3.
4. $\angle 2 \cong \angle 10$	4.
5. $\ell \parallel m$	5.

3. Given:  $\ell \parallel m$ ,  $\angle 7$  and  $\angle 12$  are supplementary

Prove:  $a \parallel b$

Plan for proof:

<u>Statements</u>	<u>Reasons</u>
1. $\ell \parallel m$	1.
2. $\angle 6 \cong \angle 12$ or $m\angle 6 = m\angle 12$	2.
3. $\angle 7$ and $\angle 12$ are supp.	3.
4. $m\angle 7 + m\angle 12 = 180$	4.
5. $m\angle 7 + m\angle 6 = 180$	5.
6. $\angle 7$ and $\angle 6$ are supp.	6.
7. $a \parallel b$	7.